

Application No.: 09/683,523
Amendment dated: March 3, 2004
Reply to Office Action of October 3, 2003

a) Listing of the Claims

1. (Previously amended) A weld wire comprising:

a sheath encapsulating a metal core made of powdered metal, wherein a fill percentage of the metal core is higher than approximately 12%; and

the metal core having a core composition alloyed with an alloying element selected from the group consisting Cr, Mo, V, W, Hf, Nb and combinations thereof, wherein a total weight percentage of the alloying element in the core composition does not exceed approximately 1%wt.

2. (Previously amended) The weld wire of Claim 1, wherein the alloying element is Mo in an amount selected from the range of about 0 to about 0.5 percent by weight.

3. (Previously amended) The weld wire of Claim 1, wherein the fill percentage of the metal core is selected from the range of about 12%wt to about 30%wt.

4. (Previously amended) The weld wire of Claim 1, wherein the total percentage of the alloying element is selected from the range of about 0.4%wt to about 0.8%wt.

5. (Previously amended) The weld wire of Claim 1, wherein the core composition mainly comprises, approximately, by weight:

C 0.021-0.043%,

Mn 1.0-1.69.0%,

Si 0.33-0.66%, and

Ni 0.016-0.033%

and the fill percentage of the metal core is higher than approximately 12%.

6. (Previously amended) The weld wire of Claim 1, wherein the alloying combination comprises, approximately,

Cr Up to 0.5 %wt

Mo Up to 0.5 %wt

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W Up to 0.5 %wt

V Up to 0.5 %wt

Hf Up to 0.5 %wt

Nb Up to 0.5 %wt.

7. (Previously amended) An improved productivity weld wire comprising:

a sheath encapsulating a steel core having a core fill percent of more than 12%;

and

the steel core having a composition comprising an alloying element selected from the group consisting of Cr, Mo, V, W, Hf, Nb and combinations thereof, wherein a deposition rate of the weld wire when used during welding increases with the increase of the core fill percent.

8. (Previously amended) The improved productivity weld wire of Claim 7, wherein the deposition rate increases from about 15 lb/hr for the core fill percent of about 12%wt to the deposition rate of about 20 lb/h for the core fill percent of about 30%.

9. (Original) The improved productivity weld wire of Claim 7, wherein a total weight percentage of an alloying element does not exceed approximately 1%.

10. (Original) The improved productivity weld wire of Claim 8, wherein a total weight percentage of Mo varies from about 0% to about 0.4%.

11. (Original) The improved productivity weld wire of Claim 7, wherein the steel core is made of a compacted metal powder.

12. (Previously amended) An improved productivity weld wire comprising:

a sheath encapsulating a metal core, wherein a core fill percent of the metal core is higher than 12%;

and the metal core having a core composition alloyed with an alloying element selected from the group consisting of Cr, Mo, V, W, Hf, Nb and combinations thereof.

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wherein a total weight percentage of the alloying element in the core composition does not exceed approximately 1 %wt, and wherein a travel speed of the weld wire when used in welding ranges from about 65 in/min to about 145 in/min.

13. (Previously amended) The improved productivity weld wire of Claim 12, wherein the travel speed of the wire when used in welding is a maximum travel speed ranging from about 80 in/min to about 145 in/min for the core fill percent ranging from about 12%wt to about 30%wt.

14. (Original) The improved productivity weld wire of Claim 12, wherein the travel speed of the wire when used in welding increases from about 65 in/min to about 90 in/min.

15. (Previously amended) The improved productivity weld wire of Claim 13, wherein the maximum travel speed of the wire when used in welding corresponds to the core composition comprising a percentage of Mo ranging from about 0%wt to about 0.4%wt.

16. (Previously amended) A method of manufacturing a weld wire comprising:
forming a sheath into a shape which can be filled with a metal powder;
filling the sheath with the metal powder, the metal powder alloyed with an alloying element selected from the group consisting of Cr, Mo, V, W, Hf, Nb and combinations thereof, wherein a total weight percentage of the alloying element in the core composition does not exceed approximately 1%wt;
compacting the metal powder to form a metal core; and
drawing the wire to achieve a core fill percentage of the metal core no less than 12%.

17. (Previously amended) The method of Claim 16, wherein the core fill percentage ranges from about 12%wt to about 30%wt.

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18. (Original) The method of Claims 17, wherein the alloying element is Mo and wherein the total weight percentage of Mo ranges from about 0% to about 0.4%.

19. (Original) The method of Claim 16, wherein the total weight percentage of the combination ranges from about 0.4% to about 0.8%.

20. (Previously amended) The method of Claim 16, wherein the alloying combination comprises, approximately,

Cr - Up to 0.5 %wt

Mo - Up to 0.5 %wt

W - Up to 0.5 %wt

V - Up to 0.5 %wt

Hf - Up to 0.5 %wt

Nb - Up to 0.5 %wt.